82733
S/089/60/009/002/004/015
B006/B056

24.6710

AUTHORS: Sevryugova, N. N., Uvarov, O. V., Zhavoronkov, N. M.

TITLE: Separation of Stable Boron Isotopes 19

PERIODICAL: Atomnaya energiya, 1960, Vol. 9, No. 2, pp. 110-125

TEXT: The present article gives a detailed description of the methods of separating the boron isotopes B^{10} and B^{11} which are interesting for industrial purposes. The molar ratio of the two isotopes in naturally occurring boron is about 20 : 80. The various methods furnish somewhat different values, and various authors also obtained different results by one and the same method (on BF_3) (cf. Table 1). These problems are briefly dealt with in the introduction, after which the electromagnetic method, the method of thermal diffusion, and the method of diffusion in the vapor current of an inert substance are discussed, while in the following the two most important methods of industrial separation of isotopes are explained in great detail: the method of chemical isotopic exchange and the method of rectifying boron halides. G. M. Panchenkov, V. D. Moyseyev, and A. V. Makarov

4

Card 1/4

(Ref. 31) were among the first who suggested using the chemical exchange between boron halides and organic boron halogen complexes for the separation of boron isotopes. The separation factor α is comparatively large for these processes and is, on the average, about 1.03. Its temperature dependence for the systems $(C_6H_5)(CH_3)OBF_3 - BF_3$ and $(C_4H_9)SBF_3 - BF_3$ is given in Tables 2 and 3. For the last-mentioned system α attains a maximum value of 1.054 at -20°C. The α-values determined by various authors by means of different isotopic exchange methods are given in Table 4. The grave disadvantage of the method consists in the high molecular weight of the complex. This is the reason why industrial plants find it less economical to work by this method. The rectification methods are considerably more simple, but, in this case, the separation factor is small. In $BO_3(CH_3)_2$, e.g., it is only 1.001; in practice, only BF_3 and BCl_3 are used, which have a somewhat higher α. In the first case, the temperature dependence of α is given by $\alpha = 1.0488\ e^{-6.17/T}$, and in the second case by $\alpha = 1.0112\ e^{-2.33/T}$. The temperature- and pressure dependence of α

4

82733

Separation of Stable Boron Isotopes

S/089/60/009/002/004/015
B006/B056

in BF_3 rectification are illustrated also by the numerical values in Table 6 and the $\alpha(T)$ curve in Fig. 3. $\alpha(T)$ for BCl_3 rectification is shown in Fig. 5. The greatest disadvantage of the rectification methods consists in the fact that, for the purpose of increasing α, it is necessary to work at the lowest possible temperatures, which reduces productivity because of the consumption of liquid air. BCl_3 rectification seems to be the most profitable method; though the separation factor is only about 1.003, this value may be attained at atmospheric pressure and room temperature. A large table (5) shows the characteristics of the individual columns for rectification- and isotopic exchange methods (taken from Refs. 40-47). The most important data of the various methods are compared in Table 7. There are 7 figures, 7 tables, and 71 references: 23 Soviet, 20 US, 5 German, 4 British, 1 French, 6 Dutch, 2 Swedish, and 1 South African.

Card 3/4

MALYUSOV, V.A.; UMNIK, N.N.; ZHAVORONKOV, N.M.

Separation of semiproducts in the synthesis of vitamin A by vacuum rectification and molecular distillation. Med.prom. 14 no.11:27-33 N '60. (MIRA 13:11)

1. Nauchno-issledovatel'skiy fiziko-khimicheskiy institut imeni L.Ya.Karpova.
(VITAMINS—A)

S/074/60/029/009/002/002
B013/B064

AUTHORS: Sakodynskiy, K. I., Zhavoronkov, N. M.

TITLE: Two-temperature Methods of Producing Heavy Water 19

PERIODICAL: Uspekhi khimii, 1960, Vol. 29, No. 9, pp. 1112-1135

TEXT: The present survey deals with methods of producing heavy water, the main laws of two-temperature methods, and the systems of the substances used. Methods of producing heavy water are given in a number of surveys (Refs. 12-32) and in a monograph (Ref. 33). In principle, all methods of isotope separation are suited for the concentration of heavy water. The following methods have found industrial application: electrolysis of water combined with the isotopic exchange between water and hydrogen, rectification of water, low-temperature rectification of hydrogen, and two-temperature exchange between water and hydrogen sulfide. The two last-mentioned methods have gained ever-increasing importance during the past ten years (Ref. 34). The principal methods given are usually combined with one another according to the operating conditions. All production processes of D_2O can be divided into independen methods, and into methods depending

Card 1/3

on the production of other substances. The distillation of water and the two-temperature exchange between water and hydrogen sulfide belong to the former. The others comprise all the other methods whose capacity is limited by the amount of hydrogen production for works of ammonia synthesis. Table 1 gives some main indices of the different methods of synthesis. The table indicates that the two-temperature exchange and the low-temperature rectification of water are the most favorable methods from the economic point of view. These two methods are applied in several countries on an industrial scale (Refs. 11, 43-47). A list of the plants in operation and of the biggest projects of heavy-water production is published in Ref. 30. Refs. 34, 48, 49 give data on the production of heavy water in several countries. The main laws of the two-temperature method are described (Figs. 1-7 and Refs. 12, 19-25, 30, 31, 35, 50-62). This method can be applied in two ways: 1) by cascade-like arrangement of individual pairs of multi-stage apparatus; one of the apparatus operates at a low, the other at a high temperature (Fig. 1); 2) by linking two multi-stage columns one of which operates at a high, the other at a low temperature (Fig. 2). Requirements to be met in selecting the system of substances are given. Table 2 gives a [illegible] on of some systems of substances. It

Two-temperature Methods of Producing Heavy Water

S/074/60/029/009/002/002
B013/B064

shows that the highest deuterium yield is obtained when applying the systems water - hydrogen, water - hydrogen halide, or ammonia - hydrogen. The following systems are described: water - hydrogen: Tables 3, 4, Figs. 8, 9 (Refs. 12, 15, 19, 24, 36, 45, 57, 66-76); ammonia - hydrogen: Table 5, Figs. 10-12 (Refs. 33, 77-84); water - hydrogen sulfide: Tables 6, 7, Figs. 13, 14 (Refs. 12, 15, 19, 35, 40, 45, 48, 51, 57, 73, 79, 85-127); other systems: Tables 8-10, Fig. 15 (Refs. 9, 18, 35, 62-64, 128-132). I. V. Kurchatov, A. M. Rozen, Ya. M. Varshavskiy, and S. E. Vaysberg are mentioned. There are 15 figures, 10 tables, and 132 references: 16 Soviet.

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova (Physicochemical Institute imeni L. Ya. Karpov)

Card 3/3

5.3300

77537
SOV/80-33-1-46/49

AUTHORS:	Gil'denblat, I. A., Furmanov, A. S., Zhavoronkov, N. M.
TITLE:	Brief Communications. The Vapor Pressure Over Crystalline Naphthalene
PERIODICAL:	Zhurnal prikladnoy khimii, 1960, Vol 33, Nr 1, pp 246-248 (USSR)
ABSTRACT:	The dependence of vapor pressure of naphthalene in air on temperature from 16 to 50° was investigated. Hot, dry (or cooled) air was passed through naphthalene. The pressure was determined by the loss of weight of naphthalene. (See Table A.) There are 2 figures; 1 table; and 7 references, 1 Soviet, 1 German, 3 U.S., 2 U.K. The U.S. and U.K. references are: J. C. Chu, J. Kalil, W. Wetteroth, Chem. Eng. Prog., 49, 141 (1953); H. L. Shulman, C. F. Ullrich, A. Z. Proulx, J. O. Zimmerman, A. I. Ch. E. J., 1, 253 (1955); G. W. Sears, E. R. Horke, J. Am. Chem. Soc., 76, 2026 (1954); J. S. G. Thomas, J. Soc. Chem. Ind., 35, 506

Card 1/3

77537, SOV/80-33-1-46/49

Table A: (a) Temperature (in ° C); (b) airfeed rate (in l/min); (c) vapor pressure (in mm).

(a)	(b)	(c)	(a)	(b)	(c)
16.15	0.12	0.0351	28.6	0.24	0.1251
16.15	0.24	0.0331	32.5	0.11	0.1776
18.15	0.12	0.0417	32.5	0.24	0.1750
18.15	0.24	0.0435	32.5	0.24	0.1759
19.8	0.11	0.0490	37.4	0.24	0.2671
19.8	0.24	0.0482	37.4	0.11	0.2780
21.1	0.12	0.0600	40.25	0.12	0.3498
21.1	0.24	0.0578	40.25	0.24	0.3498
23.2	0.24	0.0714	42.6	0.05	0.4338
23.2	0.11	0.0715	42.6	0.08	0.4346
26.15	0.12	0.0949	42.6	0.09	0.4348
26.15	0.24	0.0939	50.3	0.05	0.8459
28.6	0.11	0.1228	50.3	0.10	0.8401
28.6	0.24	0.1226	50.3	0.10	0.8393

Card 2/3

Brief Communications. The Vapor Pressure Over Crystalline Naphthalene

77537
SOV/80-33-1-46/49

(1916); R. S. Bradley, T. G. Cleasby, J. Chem. Soc., 1960 (1953).

ASSOCIATION: D. I. Mendeleev Moscow Chemical-Technological Institute (Moskovskiy khimikotekhnologicheskiy institut imeni D. I. Mendeleeva)

SUBMITTED: July 21, 1959

Card 3/3

ZHAVORONKOV, N.M.; GIL'DENBLAT, I.A.; RAMM, V.M.

Study of mass transfer to a single-phase gaseous stream in packed columns. Zhur. prikl. khim. 33 no.8:1790-1800 Ag '60. (MIRA 13:9)
(Packed towers) (Mass transfer)

/076/60/034/05/10/038
010/B002

5.2400(A)

AUTHORS: Sevryugova, N. N., Uvarov, O. V., Zhavoronkov, N. M.

TITLE: Separation Factors of Boron Isotopes in the Equilibrium Vaporization of Boron Fluoride

PERIODICAL: Zhurnal fizicheskoy khimii, 1960, Vol. 34, No. 5, pp. 1004-1008

TEXT: The authors investigated the dependence of the separation factors α on temperature with respect to the system $B^{11}F_3 - B^{10}F_3$ under equilibrium vaporization. The values of α were determined by Raleigh's distillation method. In order to obtain a larger value of G_o/G_E (G_o and G_E = amount of substance at the beginning and at the end of distillation), vaporization was brought about in two stages. Experiments took place in a device suited for the purpose (Fig. 2), the main elements of which are two vaporization vessels (Fig. 1), in which mixing is done with magnetic stirrers. The vessels are installed in a cryostat filled with isopentane, the temperature of which is measured with thermocouples. Experiments showed (Table 1) that the maximum value of α is attained at a stirrer speed of 200 rpm. Determinations of the influence exerted by the boiling temperature (measured at 157 to 168°K) on the value of α revealed (Table 2) that α drops with temperature, which fact had already [illegible] observed on the system $B^{11}Cl_3 - B^{10}Cl_3$.
Card 1/2

Separation Factors of Boron Isotopes in the Equilibrium Vaporization of Boron Fluoride S/076/60/034/05/10/038 B010/B002

In the present case, this dependence amounted to $\alpha = 1.0488\ e^{-6.17/T}$ (3). Since α rises with temperature, it is expedient to rectify BF_3 at atmospheric or higher pressure. The samples were analyzed by means of an MC-4 (MS-4) mass spectrometer. $B^{11}F_3$ was found to be the more readily volatilizing component in the temperature range investigated. On the strength of experimental results obtained by G. M. Panchenkov, V. D. Moiseyev, and N. A. Lebedev (Ref. 6) concerning the dependence of the ratio between the peak height of $(B^{10}F_2)^+$ and $(Si^{28}F_3)^+$ on the silicon fluoride content in BF_3, less than 0.1 mole% of SiF_4 was found to occur in the samples investigated. There are 3 figures, 2 tables, and 6 references: 3 Soviet, 1 American, and 2 German.

SUBMITTED: June 23, 1958

Card 2/2

S/076/60/034/009/039/041XX
B020/B056

AUTHORS: Matveyev, K. I., Uvarov, O. V., Zhavoronkov, N. M.

TITLE: The Separation Factors of Chlorine Isotopes in Equilibrium Vaporization of Cl_2

PERIODICAL: Zhurnal fizicheskoy khimii, 1960, Vol. 34, No. 9, p. 2123

TEXT: In 1959, the authors published a paper (Ref. 1), in which the separation factors of chlorine in equilibrium vaporization of HCl had been determined. When using the same method, the temperature dependence of the separation factors of the chlorine isotopes Cl^{35} and Cl^{37} in equilibrium evaporation of molecular chlorine was measured. On the assumption that the ratio of the vapor pressures of two kinds of isotopes of chlorine molecules is equal to the separation factor α (which holds for the majority of isotopic systems), the temperature dependence of this ratio may be expressed by the following equations:

$$\ln \alpha_1 = \ln(pCl_2^{35}/pCl_2^{37}) = 1.7736/T - 0.00723 \qquad (1)$$

$$\ln \alpha_2 = \ln(pCl^{35}Cl^{37}/pCl_2^{37}) = 392/T - 0.003896 \qquad (2)$$

Card 1/2

The Separation Factors of Chlorine Isotopes in Equilibrium Vaporization of Cl_2

S/076/60/034/009/039/041XX
B020/B056

The partial pressures of the various kinds of isotopes are determined from the isotopic ratio by means of mass spectrometry. The data given in the accompanying table show that the preparation of pure chlorine isotopes by rectification of molecular chlorine is unsuitable, because even at a pressure of about 100-200 mm Hg the separation factor is very small (1.0015 - 1.0010). There are 1 table and 1 Soviet reference.

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova (Physicochemical Institute imeni L. Ya. Karpov)

SUBMITTED: February 17, 1960

Card 2/2

S/020/60/134/004/035/036XX
B004/B067

AUTHORS: Sevryugova, N. N. and Zhavoronkov, N. M., Corresponding Member of the AS USSR

TITLE: Temperature Dependence of the Partition Coefficient of the System $C^{13}O$ - $C^{12}O$

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 134, No. 4, pp. 875-878

TEXT: The authors attempted to study the partition coefficients in the $C^{13}O$ - $C^{12}O$ system, which had been determined already earlier by other scientists, in a wider temperature range. They measured the difference ΔP between the vapor pressure of carbon monoxide with a natural content of C^{13} and O^{18} and the vapor pressure of carbon monoxide with 23% and 32% C^{13}. The purification of CO with natural isotopic composition and obtained from pure sulfuric and formic acids is described: removal of moisture, oxidation to CO_2 by means of CuO, removal of N_2, O_2, Ar by freezing, reduction to CO by means of Zn, examination of purity by means of an

Card 1/3

Temperature Dependence of the Partition Coefficient of the System $C^{13}O - C^{12}O$

S/020/60/134/004/035/036XX
B004/B067

MC-4 (MS-4) mass spectrometer and on the basis of the freezing point. Samples with C^{13} excess and normal O^{18} content were obtained from the CO samples with C^{13} and O^{18} excess, which had been prepared at the laboratory of adsorption processes of the authors' Association according to the following reaction scheme: $C^{13}O^{18}+CuO^{16} = Cu+C^{13}O^{16}O^{18}$; $C^{13}O^{16}O^{18}+4H_2 = C^{13}H_4+H_2O^{16}+H_2O^{18}$; $C^{13}H_4+4CuO^{16} = 4Cu + 2H_2O^{16}+C^{13}O_2^{16}$; $C^{13}O_2^{16}+Zn = ZnO+C^{13}O^{16}$. These samples were purified in the same way as the standards with natural composition. ΔP was measured in an apparatus calibrated with a CO standard. The apparatus contained two cells filled with a standard and $C^{13}O$. The temperature was varied between -170 and +205°C, corresponding to a pressure change from 100 mm Hg to 5 atm in the cells. A temperature dependence of the partition coefficient α was obtained from the equation $(\alpha - 1) = \Delta P/P(N_1 - N_2)$ (P = pressure in the cells; N_1 and N_2 = C^{13} content in the two cells expressed in molar parts), which follows the equation $\alpha = A\exp(B/T)$. The following values were found for the constants by a graphical representation of the function $\log\alpha = f(1/T)$: A = 0.9954; B = 1.477. $B = (\lambda_{C^{13}O} - \lambda_{C^{12}O})/R = \Delta\lambda/R$, where λ denotes the evaporation

Card 2/3

Temperature Dependence of the Partition
Coefficient of the System $C^{13}O - C^{12}O$

S/020/60/134/004/035/036XX
B004/B067

heat of the CO samples concerned. 2.93 cal/mole were obtained for $\Delta\lambda$. There are 3 figures, 1 table, and 4 references: 1 Soviet, 1 British, 1 Dutch, and 1 German.

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova (Physico-chemical Institute imeni L. Ya. Karpov)

SUBMITTED: June 15, 1960

✓

Card 3/3

MALAFEYEV, N.A.; MALYUSOV, V.A.; UMNIK, N.N.; PODGORNAYA, I.V.; ZHAVORONKOV, N.M.

Saturated vapor pressure of tetrachloroalkanes at low temperatures. Dokl. AN SSSR 135 no.3:659-662 N '60. (MIRA 13:12)

1. Fiziko-khimicheskiy institut im. L.Ya. Karpova. 2. Chlen-korrespondent AN SSSR (for Zhavoronkov).

(Paraffins) (Vapor pressure)

ZHAVORONKOV, N. M., NIKOLAYEV, A. M., and SAFIN, R. S.

"Investigation of the Physical Absorption and Chemical Sorption Processes in a Rotationary Type of Apparatus."

Report submitted for the Conference on Heat and Mass Transfer, Minsk, BSSR, June 1961.

ZHAVORONKOV, N. M., NIKONOV, A. P., and NIKOLAEV, A. M.

"Experimental Verification of the "Two-films" Theory in Absorption Processes."

Report submitted for the Conference on Heat and Mass Transfer, Minsk, BSSR, June 1961.

y

ZHAVORONKOV, N. M., PONIKAROV, I. I., and NIKILAEV, A. M.

"Maximum Loads and Mass Transfer in a Rotationary Disk Extractor."

Report submitted for the Conference on Heat and mass Transfer, Minsk, BSSR, June 1961.

ZHAVORONKOV, N.M.

Development of the chemical industry and of scientific research in Norway. Khim. prom. no. 2:138-144 F '61. (MIRA 14:4)

1. Chlen-korrespondent AN SSSR.

(Norway—Chemical industries)

MALAFEYEV, N.A.; MALYUSOV, V.A.; UMNIK, N.N.; SAKODYNSKIY, K.I.; ZHAVORNOKOV, N.M. Prinimali uchastiye: PODGORNAYA, I.V.; ABRAMOVA, V.P.; BARANOVA, V.I.

Determination of the fractionation factors of binary mixtures tetrachloroalkanes during vaporization in a high vacuum. Khim.prom. no.3:196-198 Mr '61. (MIRA 14:3)

(Paraffins) (Distillation, Fractional)

ORLOV, V.Yu.; ZHAVORONKOV, N.M.

Intensification of mass transfer in countercurrent extraction under
the effect of sonic and ultrasonic vibrations. Zhur.VKHO 6
no.5:595-596 '61. (MIRA 14:10)

1. Fiziko-khimicheskiy institut imeni L.Ya.Karpova.
(Mass transfer) (Extraction (Chemistry)) (Ultrasonic waves)

KONOBEYEV, B.I., kand.khim.nauk; MALYUSOV, V.A., kand.khim.nauk;
ZHAVORONKOV, N.M.

Film absorption in a high speed gas flow. Khim. prom. no.7:475-481 Jl '61. (MIRA 14:7)

1. Chlen-korrespondent AN SSSR (for Zhavoronkov).
(Absorption)

ZHAVORONKOV, N.M.

Chemistry and the creation of material and technical foundations of communism. Khim. prom. no.10:1-7 O '61. (MIRA 15:2)

1. Chlen-korrespondent AN SSSR.
(Chemistry)

MALYUSOV, V.A.; ORLOV, V.Yu.; MALAFEYEV, N.A.; UMNIK, N.N.;
ZHAVORONKOV, N.M.

Separation of lithium isotopes by the method of molecular distillation of liquid lithium. Atom.energ. 11 no.5:435-439 N '61. (MIRA 14:10)

(Lithium—Isotopes)

ZHAVORONKOV, N.M.; GIL'DENBLAT, I.A.; RAMM, V.M.

Mass transfer in packed columns to single phase gas flow. Trudy MKhTI no.33:57-60 '61. (MIRA 14:10)

(Mass transfer)
(Packed towers)

ZHAVORONKOV, N.M.; GIL'DENBLAT, I.A.; RAMM, V.M.; DOVVEN, V.S.

Liquid holdup in the packing of absorption columns. Trudy MKHTI no.33:75-83 '61. (MIRA 14:10)

(Packed towers)

ZHAVORONKOV, N.M.; RAMM, V.M.; GIL'DENBLAT, I.A.; ZAKGEYM, A.Yu.

Effect of the initial distribution of irrigating liquid on the efficiency of absorption on packed columns. Trudy MKhTI no.33:84-91 '61. (MIRA 14:10)

(Packed towers)
(Absorption)

MATVEYEV, K.I.; UVAROV, O.V.; ZHAVORONKOV, N.M.

Separation of chlorine isotopes by the chemical exchange method.
Zhur.prikl.khim. 34 no.11:2563-2566 N '61. (MIRA 15:1)
(Chlorine—Isotopes)

MALAFEYEV, N.A.; YUDINA, I.P.; NEVSKAYA, Ye.M.; ZHAVORONKOV, N.M.

Separation of high-boiling compounds by gas-liquid chromatography at low temperatures. Khim.prom. no.5:320-322 My '62. (MIRA 15:7)
(Gas chromatography)

S/191/62/000/006/002/016
B110/B138

AUTHORS: Sevryugova, N. N., Sokol'skiy, V. A., Chervyakova, A. A., Zhavoronkov, N. M.

TITLE: High purification of industrial styrene

PERIODICAL: Plasticheskiye massy, no. 6, 1962, 5-7

TEXT: An attempt was made to reduce the impurity content of styrene to analytical purity. Rectification was performed at 50 mm Hg in a Pyrex laboratory rectification column. The column, 1.5 mm high and 30 mm in diameter, was filled with 3·3 mm spirals of 0.2 mm stainless wire and possessed only a slight hydraulic resistance. The surface of the condensation column was calculated so that vapor completely condensed even under maximum pressure. Before setting the apparatus in operation, it was evacuated to 1-2 mm Hg, 1 liter styrene was poured into the flask, and the heater switched on. With a styrene/ethyl benzene mixture in a ratio of 4 to 13% and a distribution coefficient of 1.38, the maximum load on the cross-section of the column $\leq$ 1100 cc/hr, equivalent to 160 $cc/cm^2 \cdot hr$. With a minimum charge of 56% , the steady state developed after 8 hrs.

Card 1/2

High purification of industrial ... S/191/62/000/006/002/016
B110/B138

As the efficiency of the column falls only slightly with increasing charge, later experiments were conducted with maximum charge. Following N. N. Bushmakin (ZhPKh, 33, no. I, 127 (1960)) the relation of the efficiency of the column to the reflux was determined at 10-12 mm Hg (upper part of the column) and 1000 cc/hr. The efficiency fell only slightly after an extraction of more than 15-20%. An attempt was then made to produce pure styrene at an efficiency of 18-20 theoretical plates, a residual pressure of 14 mm Hg (upper part of the column), and 1000 cc/hr. The steady state was reached after 8 hrs, and extraction proceeded at a constant rate. At 500 cc of styrene, fraction I (50 cc) contained volatile constituents (ethyl benzene and water), fraction II $< 0.1\%$ by weight of ethyl benzene, $< 0.0002\%$ by weight of divinyl benzene, $< 0.0002\%$ by weight of water, $< 0.01\%$ by weight of polymer, and $< 0.0001\%$ by weight of hydroquinone. The quantity of ethyl benzene was determined from the index of refraction or by spectral analysis (absorption bands in the infrared) with an accuracy of 0.1%. Divinyl benzene was determined by spectrophotometry, water with Fischer's reagent, and the polymer and hydroquinone only qualitatively with 4% alkali. There are 3 figures and 1 table.

Card 2/2

S/081/62/000/017/052/102
B158/B166

AUTHORS: Žavoronkov, N. M., Sakodynskij, K. I.

TITLE: Industrial manufacture of heavy water

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 17, 1962, 353, abstract 17K8 (Kernenergie, v. 4, no. 12, 1961, 893-904 [Ger.])

TEXT: A review is presented. Methods of producing heavy water and information on plants and units for heavy water production constructed, in course of construction, and planned are given. Data are presented on the dynamics of variation in the productive capacity for heavy water, and data on the costs of producing heavy water by various methods are compared. 63 references. [Abstracter's note: Complete translation.]

✓

Card 1/1

MALAFEYEV, N.A.; YUDINA, I.P.; ZHAVORONKOV, N.M.

High temperature gas-liquid chromatography. Usp.khim. 31 no.6:710-723 Je '62. (MIRA 15:5)

1. Fiziko-khimicheskiy institut imeni L.Ya. Karpova.
(Gas chrcmatography)

43470

S/076/62/036/012/005/014
B101/B180

11-3800

AUTHORS: Uvarov, O. V., Sokolov, N. M., and Zhavoronkov, N. M. (Moscow)

TITLE: Physical and chemical constants of heavy oxygen water

PERIODICAL: Zhurnal fizicheskoy khimii, v. 36, no. 12, 1962, 2699 - 2706

TEXT: Water containing ~47% H_2O^{18} and up to 60% D_2O was purified, and the D_2O content was reduced to 0.016 mole% with reduced heated metallic hot iron. The following physicochemical constants were determined: (A) The H_2O^{16} - H_2O^{18} separation coefficient α by a differential method similar to that used by W. H. Keesom, J. Haantjes (Physica, 2, 986, 1935) for separating neon isotopes. Result: between 20 and 210°C, $\log \alpha = 3.300/T - 0.00722$ which is in good agreement with data obtained by other researchers; $\alpha_{100^\circ C} = 1.0038$. The difference in heats of vaporization is 14.97 cal/mole, the boiling point of H_2O^{18} at 760 mm Hg is 100.13°C. (B) The refractive index was determined with an interferometer. $\Delta n = 0.00034 N_{H_2O^{18}}$ holds for

Card 1/2

Physical and chemical ...

S/076/62/036/012/005/014
B101/B180

white light at 20°C; $N_{H_2O^{18}}$ is the molar part of H_2O^{18} in the mixture. Between 10 and 30°C, the temperature coefficient of the difference in refractive indices of H_2O^{16} and H_2O^{18} is $(1{,}18 - 1{,}20)\cdot 10^{-6}$. (C) The water density was determined pycnometrically for different H_2O^{18} contents. Results: $d_4^t = A + 0.001070\, N_{H_2O^{18}}$, where A = 0.99720 at 25°C, 0.99580 at 30°C, and 0.99230 at 40°C. At 25°C, the density of 100% H_2O^{18} is 1.10724 with respect to river water. There are 3 figures and 5 tables. The most important English-language references are: S. Sakata a. N. Morita, Bull. Chem.Soc. Japan, 29, 284, 1956; H. E. Watson, J. Amer. Chem. Soc., 76, 5884, 1954.

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova (Physico-chemical Institute imeni L. Ya. Karpov)

SUBMITTED: June 23, 1961

Card 2/2

ZHAVORONKOV, Nikolay M.

"System and methods of training contemporary engineers for chemical and related branches of industry and science"

report to be submitted for the United Nations Conference on the Application of Science and Technology for the Benefit of the Less Developed Areas - Geneva, Switzerland, 4-20 Feb 63.

S/030/63/000/001/003/013
B117/B186

AUTHOR: Zhavoronkov, N. M., Academician

TITLE: Fundamental problems of modern chemical technology

PERIODICAL: Akademiya nauk SSSR. Vestnik, no. 1, 1963, 32 - 37

TEXT: The paper deals with modern trends of development in chemical engineering and technology which are to be incorporated in the Soviet chemical industry. The necessity for changing over to conditions of operating under extreme parameters such as low, super-low, high, super-high temperatures and pressures, extreme reaction and mixing rates etc. is emphasized first. As regards manufacture of new types of materials, the development of new crystalline glass material, also called "glass ceramics", is mentioned. This is designated in the Soviet publication as "sitall" and the industrial branch engaged in the production of the same "sitallurgiya" (sitallurgy). It is made by submicroscopic crystallization of molten slags from wastes of the metallurgical industry. As to its properties, "sitall" may be used to replace cast iron in mechanical and sanitary engineering, in pipe manufacture, etc. Manufacture of polymers is to be intensified and

Card 1/4

Fundamental problems of modern...

S/030/63/000/001/003/013
B117/B186

expanded. Synthesis of substances from pure and superpure compounds and elements is advocated. In addition to efficient fertilizers, synthetic high-value food is to be made by extraction and concentration from vegetables, by chemical or biochemical conversion of indigestible organic substances as well as by synthesis from water, air, and carbonic acid derived from inorganic raw material. Theoretical studies basic to chemical engineering, especially hydrodynamics, heat and mass transfer, are to be extended. Fluidized bed processes, including the double-phase flow in various types of apparatus, the kinetics of separation processes for heterogeneous systems such as settling, filtering, centrifuging at great velocities (up to supersonic) are to be described by adequate theoretical methods, gained from the extensive experience in this field over recent years. Double-phase flows, turbulent transfers in the boundary layers of solid and in particular of liquid phases, as well as vibration and ultrasonic mixing of emulsions, suspensions are being given special attention. The applicability of heat and mass transfer theories to supersonic flow regions should be investigated. Heat transfer problems already worked out are to be extended to large-size reaction vessels. Theoretical problems as well as the design and construction of apparatus in the mass transfer field (rectification, absorption, separation of multicomponent systems, new and

Card 2/4

Fundamental problems of modern... S/030/63/000/001/003/013
B117/B186

more efficient types of trays for rectifying columns, etc.) are to have more work done upon them since almost 50% of chemical processes are associated with this field. Recent experimental research showed that it is possible to conduct separating processes at rates of 50 to 70 m/sec, and even above, in parallel-current type flows of gas and vapors over very thin liquid layers (30 - 100 micron). This result will eventually lead to novel high-speed mass transfer apparatus. Research on efficient interaction between parallel-current and counter-current flow systems, of which the tubular type is the simplest, is carried on in the USSR. Film flows in tubes at great relative velocities (with respect to the flow of the liquid) were achieved having mass transfer coefficients increased by a factor of 5 to 7, or even more, as compared with coefficients of counter-current systems alone. CO_2 was successfully absorbed by water in tubes with sprinkled walls at a rate of 85 m/sec at the Fiziko-khimicheskiy institut L. Ya. Karpova (Physicochemical Institute imeni L. Ya. Karpov). It was found that in the presence of wave formation the convection type transfer was predominant over the molecular type transfer, and that the mass transfer coefficient in the liquid is a function of wave length and amplitude. Automation of chemical processes should be enhanced by cybernetics and by applying

Card 3/4

Fundamental problems of modern... S/030/63/000/001/003/013
B117/B186

mathematical and computer calculation methods for the description of chemical engineering processes as well as for optimum design, control and planning of processes and apparatus. Transition from the laboratory experimental stage to the pilot plant and industrial manufacturing stages should be accelerated, utilising methods of mathematical description, simulation and modeling in order to minimize the amount of experimental data needed. Scientists, engineers and technicians should be given an adequately improved professional and scientific training.

Card 4/4

ZHAVORONKOV, N.M., akademik

In memory of Ivan Platonovich Losev. Zhur. VKHO 8 no.4:475-478 '63.
(MIRA 16:10)

1. Chlen Prezidiuma TSentral'nogo pravleniya Vsesoyuznogo khimicheskogo obshchestva imeni D.I. Mendeleyeva.
(Losev, Ivan Platonovich, 1878-1963)

Structure [illegible]

tion of [illegible] plex [illegible]

ZHAVORONKOV, N.M., akademik; BELOV, B.I., kand.khim.nauk

Ninth Mendeleev Congress. Vest.AN SSSR 35 no.8:79-82 Ag '65.
(MIRA 18:8)

ZAVORONKOV, N.M. [Zhavoronkov, N.M.], prof., akademik (Moskva); PODHORSKY, R. [translator]

New trends in inorganic chemistry and technology. Kem ind 13 no.12:1003-1012 D '64.

1. Academy of Sciences of the U.S.S.R., Moscow (for Zhavoronkov).

ZHAVORONKOV, N.M.

Inorganic chemistry and new materials. Izv. AN SSSR. Neorg. mat. 1 no.1:5-10 Ja '65.

(MIRA 18:5)

SEVRYUGOVA, N.N.; SOKOL'SKIY, V.A.; ZHAVORONKOV, N.M.

Phase equilibria for acrylonitrile - acetonitrile mixtures.
Zhur. prikl. khim. 37 no.9:1989-1993 S '64.

(MIRA 17:10)

ZSAVORONKOV, N.M. [Zhavoronkov, N.M.] prof.; OVARI, Ferenc [translator]

Scientific-technical progress and the basic tasks of chemistry and chemical engineering. Veszprem vegyip egy kozl 7 no.1:1-22 '63.

1. Szovjetunio Tudomanyos Akademiajanak Rendes tagja. (for Zsavoronkov).

SEVRYUGOVA, N.N.; SOKOL'SKIY, V.A.; ZHAVORONKOV, N.M.

Purification of raw acrylonitrile. Khim. prom. no.8:572-576 Ag '63.
(MIRA 16:12)

PONIKAROV, I.I., inzh.; NIKOLAYEV, A.M., doktor tekhn.nauk, prof.; ZHAVORONKOV,
N.M., akademik

Investigating the limit loads of a rotary-disk extraction apparatus.
Khim.mashinostr. no.6:16-18 N-D '63. (MIRA 17:2)

NIKOLAYEV, N.A.; ZHAVORONKOV, N.M.

Hydrodynamics and mass transfer in apparatus with direct-flow contacting devices. Khim. prom. 40 no.11:835-837 N '64
(MIRA 18:2)

ZHAVORONKOV, N.M.; GIL'DENBLAT, I.A.; RAMM, V.M.

Effective phase contact surface in packed absorption towers. Trudy MKHTI no.40:5-18 '63.

Studying the effective phase contact surface in the absorption of readily soluble gases in packed towers. Ibid.:19-34

(MIRA 18:12)

GIL'DENBLAT, I.A.; GUROVA, N.M.; ZHAVORONKOV, N.M.; ZAKGEYM, A.Yu.;
RAMM, V.M.

Studying the effect of the packing height and method of irrigation distribution on the efficiency of absorption in packed towers. Trudy MKHTI no.40:35-47 '63.

(MIRA 18:12)

SOKOLOV, N.M.; SEVRYUGOVA, N.N.; ZHAVORONKOV, N.M.

Liquid-vapor equilibrium in the system acrylonitrile-acrolein at various pressures. Zhur. fiz. khim. 39 no.4:1008-1012 Ap '65. (MIRA 19:1)

1. Institut obshchey i neorganicheskoy khimii AN SSSR. Submitted May 27, 1964.

ZHAVORONKOV, N. V.

ZHAVORONKOV, N. V. -- "Methods of Teaching Students in the Older Classes (Adolescents) by Exercise on Bars and Beams." Min Education RSFSR. Moscow Oblast Pedagogical Inst. Moscow, 1955. (Dissertation for the Degree of Candidate in Pedagogical Sciences).

So.: Knizhnaya Letopis', No. 2, 1956.

ZHAVORONKOV, P.

Fire prevention in nurseries and kindergartens. Pozh.delo 6:6
Mr '60. (MIRA 13:6)

1. Zamestitel' nachal'nika gorodskoy pozharnoy okhrany, Orenburg.
(Orenburg--Nursery schools--Fires and fire prevention)

ZHAVORONKOV, P.A., professor.

Michurin methods in fruit culture of the Southern Urals.
Izv.AN SSSR Ser.biol. no.5:28-41 S-O '55. (MLRA 9:2)

1.Plodoovashchnaya stantsiya g.Chelyabinsk.
(Ural mountains--Fruit culture)

USSR/Cultivated Plants - Fruits. Berries.

Abs Jour : Ref Zhur - Biol., No 10, 1958, 44281

Autor : Zhavoronkov, P.A.
Inst :
Title : Horticulture in the Urals.

Orig Pub : Sad i ogorod, 1957, No 11, 22-25.

Abstract : No abstract.

Card 1/1

UVAROV, O.V.; SOKOLOV, N.M.; LYAPIN, V.V.; ZHAVORONKOV, N.M.

Coefficients of separation of the carbon isotopes C^{12} - C^{14} during the equilibrium vaporization of methane. Zhur. VKHO 7 no.6:695-697 '62. (MIRA 15:12)

1. Nauchno-issledovatel'skiy fiziko-tekhnicheskiy institut imeni L.Ya. Karpova.

(Methane)
(Carbon--Isotopes)
(Evaporation)

ZHAVORONKOV, N. M., akademik

Principal tasks of modern chemical technology. Vest. AN SSSR 33
no.1:32-37 Ja '63. (MIRA 16:1)

(Chemistry, Technical)

UVAROV, O. V.; SOKOLOV, N. M.; ZHAVORONKOV, N. M.

Physicochemical constants of heavy-oxygen water. Zhur. fiz. khim. 36 no.12:2699-2706 D '62. (MIRA 16:1)

1. Fiziko-khimicheskiy institut imeni L. Ya. Karpova.

(Water) (Oxigen—Isotopes)

SAKODYNSKIY, K.I.; VOLKOV, S.A.; MALAFEYEV, N.A.; BRAZHNIKOV, V.V.;
ZHAVORONKOV, N.M., akademik

Separation in preparative columns. Dokl. AN SSSR 148 no.2:394-396 Ja '63. (MIRA 16:2)

1. Fiziko-khimicheskiy institut im. L.Ya. Karpova.
(Gas chromatography)

ZHAVORONKOV, N.M.

Studies in the field of absorption and rectification.
Probl.fiz.khim. no.1:111-121 '58. (MIRA 15:11)

1. Laboratoriya razdeleniya smesey Nauchno-issledovatel'skogo fiziko-khimicheskogo instituta im. Karpova.
(Adsorption)
(Distillation, Fractional)

128

PHASE I BOOK EXPLOITATION SOV/6246

Soveshchaniye po tseolitam. 1st, Leningrad, 1961.

Sinteticheskiye tseolity; polucheniye, issledovaniye i primeneniye (Synthetic Zeolites: Production, Investigation, and Use). Moscow, Izd-vo AN SSSR, 1962. 286 p. (Series: Its: Doklady) Errata slip inserted. 2500 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Otdeleniye khimicheskikh nauk. Komisiya po tseolitam.

Resp. Eds.: M. M. Dubinin, Academician and V. V. Serpinskiy, Doctor of Chemical-Sciences; Ed.: Ye. G. Zhukovskaya; Tech. Ed.: S. P. Golub'.

PURPOSE: This book is intended for scientists and engineers engaged in the production of synthetic zeolites (molecular sieves), and for chemists in general.

Card 1/~~12~~ 3

128

Synthetic Zeolites: (Cont.)

SOV/6246

COVERAGE: The book is a collection of reports presented at the First Conference on Zeolites, held in Leningrad 16 through 19 March 1961 at the Leningrad Technological Institute imeni Lensovet, and is purportedly the first monograph on this subject. The reports are grouped into 3 subject areas: 1) theoretical problems of adsorption on various types of zeolites and methods for their investigation, 2) the production of zeolites, and 3) application of zeolites. No personalities are mentioned. References follow individual articles.

TABLE OF CONTENTS:

Foreword 3

Dubinin, M. M. Introduction 5

Card 2/12 3

13

Synthetic Zeolites: (Cont.) SOV/6246

Pavlova, S. N., Z. V. Driatskaya, and M. A. Mkhchiyan. Application of Synthetic Zeolites in Determining the Content of Normal Alkanes in Gasoline Fractions 253

Galich, P. N., I. T. Golubchenko, A. A. Gutyrya, V. S. Gutyrya, and I. Ye. Neymark. Investigation of the Possible Application of Synthetic Zeolites as Carriers and Catalysts for the Dehydrogenation and Cracking of n-Paraffins 260

Palek, M., P. Iru, O. Grubner, and G. Beyer. Synthetic Zeolites as Molecular Sieves With Color Indication of Water-Vapor Pressure 263

Malyusov, V. A., N. N. Umnik, N. N. Kulov, N. M. Zhavoronkov, G. I. Faydel', and D. O. Zisman. Purifying Formaldehyde From Moisture and Formic Acid With the Aid of Synthetic Zeolites 267

Card ~~11/12~~ 3/3

MALYUSOV, V.A.; ZHAVORONKOV, N.M.; MALAFEYEV, N.A.; ROMEYKOV, R.N.;
Prinimali uchastiye: BABKOV, S.I.; UVAROV, O.V.; SOLYANKIN,
L.N.; GRISHIN, D.M.

Effectiveness of regular packings in the rectification of water.
Khim.prom. no.7:519-529 JL '62. (MIRA 15:9)
(Packed towers)

N. V.

"New trends in material technology."

report submitted for 35th Intl Cong of Industrial Chemistry, Warsaw, Poland, 15-19 Sep 64.

ZHAVORONKOV, P.

One should not spoil children's parties. Pozh.delo 9 no.11:13 N '63.
(MIRA 17:1)

1. Zamestitel' nachal'nika Orenburgskoy pozharnoy okhrany.

ZHAVORONKOV, P.A., doktor sel'skokhozyaystvennykh nauk, prof.

Breeding winterhardy varieties of pear in the Southern Urals.
Agrobiologiia no.4:80-86 Jl-Ag '58. (MIRA 11:9)

1. Chelyabinskaya plodovo-ovoshchnaya opytnaya stantsiya.
(Ural Mountain region--Pear breeding)

ZHAVORONKOV, P.A.

Apple breeding at the Chelyabinsk Fruit and Vegetable Experiment Station. Agrobiologiia no.6:838-842 N-D '62. (MIRA 16:1)

1. TSentral'naya geneticheskaya laboratoriya imeni I.V. Michurina, Michurinsk.

(Chelyabinsk Province—Apple breeding)

ZHAVORONKOV, P. A.

25735 ZHAVORONKOV, P. A. Novye Zimostoykiye Sorta Ranetok. Sad i ogorod, 1948, No. 7, s. 32-33.

SO: Letopis' Zhurnal Statey, No. 30, Moscow, 1948.

ZHAVORONKOV, Pavel Aleksandrovich, doktor sel'skokhozyaystvennykh nauk,
laureat Stalinskoy premii; YAMPOL'SKAYA, I.G., red.; VYGOLOVA,
M.A., tekhn. red.

[Winterhardy apples and pears in the Urals] Zimostoikie iabloni i
grushi na Urale. Izd.2., perer. i dop. [Cheliabinsk] Cheliabinskoe
knizhnoe izd-vo, 1956. 261 p.
(MIRA 11:7)
(Ural Mountain region--Apple)
(Ural Mountain region--Pear)

ZHAVORONKOV, P. A.
25735

Novyye Zimostoykiye Sorta Ranetok,
Sad I Ogorod, 1948, No 7, S. 32-33

SO: LETOPIS NO. 30, 1948

AUTHOR: Zhavoronkov, P.D. SOV/132-59-4-12/17

TITLE: An Auger Core Drill for Sand Drilling.

PERIODICAL: Razvedka i okhrana nedr, 1959, Nr 4, pp 52-53 (USSR)

ABSTRACT: The author proposes a modified auger-core-drill, for drilling in sands, with which clean core samples can be obtained. This device proposed by I.Kh. Yablonik works with a type RKh chisel bit fixed on the nipple to which a special spiral cutter, forming the continuation of the screw, is soldered. This cutter cuts the rock inside the hole and pushes it along the screw of the auger. Thus the core sample always comes out clean. The drilling is done without flushing fluid. By using this auger with the UKB-2-100 drilling rig, 20 m of bore hole in sands of the Krasnogorovskoye deposit were drilled in one shift. There is 1 diagram.

ASSOCIATION: Yuzhno-Donetskaya geologorazvedochnaya partiya (The South-Donets Geological Prospecting Party)

Card 1/1

ZHAVORONKOV, P.D.

[redacted]

"Delays" of instruments in deflected boreholes. Razved. i okh. nedr 22 no.9:52-53 S' 56.
(MLRA 9:11)

1. Trest Rostovuglegeologiya.
(Boring) (Prospecting--Geophysical methods)

ZHAVORONKOV, PAVEL I

TIKHONOV, Veniamin Sergeyevich; ZHAVORONKOV, Pavel Ivanovich; YEVKEVICH, A.V., otvetstvennyy redaktor; RYKOV, N.A., redaktor izdatel'stva; NADEINSKAYA, A.A., tekhnicheskiy redaktor

[Bucket elevators for conveying and dehydration] Elevatory kovshevye transportnye i obezvozhivaiushchie. Moskva, Ugletekhizdat, 1957. 140 p.

(Coal-handling machinery) (MLRA 10:8)

ZHAVORONKOV, S. F., (Marshal of Aviation, Chief of the Main Administration of the Civil Air Fleet under the Council of Ministers USSR)

Concluded an agreement with a representative of Air-France regarding the opening of an air line between Paris and Moscow. He and the French Ambassador to the USSR signed the agreement on 29 June 1954. (Pravda, Moscow, 1 Jul 54)

SO: SUM No. 239, 13 Oct 1954

ZHAVORONKOV, V.

Beginning of a great work. Sov. profsoiuzy 6 no.3:27-29 Mr '58.
(MIRA 11:3)

1. Predsedatel' Moskovskogo gorodskogo komiteta profsoyuza rabochikh tekstil'noy i legkoy promyshlennosti.
(Moscow--Textile industry) (Trade unions)

ZHAVORONKOV, V. A.

Zhavoronkov, V. A. — "Investigation of the First Industrial Machine Tools for Transverse Screw Rolling of Profiles of Variable Section." Min Higher Education USSR, Moscow Order of Labor Red Banner Higher Technical School imeni Bauman, Moscow, 1955 (Dissertation for Degree of Candidate of Technical Sciences).

SO: Knizhnaya Letopis', No. 23, Moscow, June, 1955, pp. 87-104.

ZHAVORONKOV, V.A., aspirant.

[redacted]

Investigation of the first three-roller industrial mill designed for transverse and helical rolling. [Trudy] MVTU no.62:110-126 '55. (Rolling mills)

(MIRA 9:7)

ZHAVORONKOV, V.A

25 (1) p. 3 PHASE I BOOK EXPLOITATION SOV/292

Moscow. Vyssheye tekhnicheskoye uchilishche. Kafredra "Mashiny i tekhnologiya prokatki i volocheniya"

Prokatnyye stany i tekhnologiya prokatki; sbornik statey (Rolling Mills and Methods of Rolling; Collection of Articles) Moscow, Mashgiz, 1957. 125 p. (Series: Moscow. Vyssheye tekhnicheskoye uchilishche. /Trudy/ vyp. 80) 4,000 copies printed.

Ed.: M.I. Zaroshchinskiy, Doctor of Technical Sciences, Professor; Tech. Ed.: Ye.N. Matveyeva; Managing Ed. for Literature on Heavy Machine Building: Ya.S. Golovin, Engineer.

PURPOSE: This collection of articles is intended for the personnel of scientific research institutes, engineers, designers, teachers and students specializing in rolling methods and the building of rolling mill machinery.

COVERAGE: Theoretical and experimental studies done by the scientific workers of the department of "Machinery and methods of rolling and drawing" of MVTU (Moscow Higher Technical School) imeni Bauman are published in this collection.

Card 1/ 4

Rolling Mills and Methods of Rolling SOV/292

The articles deal with the following topics: spreading of stock in rolling and distribution of stresses and spread along the width of the stock, resistance to deformation in metal forming, change of the form of the strip depending on dimensions of the contact area in rolling in plain rolls; the theory of elastoplastic bending of a strip during straightening on a multiroll machine, investigation of basic parameters characterizing the resistance of material to rolling; simplified formula for spreading, and measuring unit pressure along the arc of contact using strain gages. No personalities are mentioned. There are 41 references, 39 Soviet and 2 English.

TABLE OF CONTENTS:

Tselikov, A.I., Corresponding Member of the Academy of Sciences, USSR, and V.A. Persiyantsev, Candidate of Technical Sciences. Effect of Cold Hardening on Resistance to Deformation in Overrecrystallization Processes 22

Zaroshchinskiy, M.L., Doctor of Technical Sciences, Professor. Change in Form of the Strip in Rolling in Plain Rolls 35

Smirnov, V.V., Candidate of Technical Sciences, Docent. On the Theory of Calculating the Power of the Drive for Rotary-type Straighteners 50

Kovolev, A.A., Candidate of Technical Sciences. Elastoplastic Bending of a Strip During Straightening on a Multiroll Machine 57

Zhavoronkov, V.A., Candidate of Technical Sciences. Investigation of Forces in Cross-helical Die Rolling of Periodic Profiles 77

Pushkarev, V.F., Candidate of Technical Sciences. Determination of Parameters Characterizing Resistance to Deformation of the Stock in Rolling 90

Rolling Mills and Methods of Rolling SOV/292

Grishkov, A.I., Assistant. Some Problems in the Theory of Spreading in Rolling in Plain Rolls	106
Grishkov, A.I., Assistant. Measuring the Distribution of Unit Pressure Along the Contact Arc With Wire Transmitters	119

AVAILABLE: Library of Congress

GO/hcr
5/25/59

Card 4/4

SOV/137-58-7-14925

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 7, p 141 (USSR)

AUTHOR: Zhavoronkov, V.A.

TITLE: In Investigation of Forces at Work in Cross-rolling Shapes With Regularly Repeated (Periodic) Variations in Cross Section (Issledovaniye silovykh vozdeystviy na stanakh poperechnovintovoy prokatki periodicheskikh profiley)

PERIODICAL: V sb.: Prokatn. stany i tekhnol. prokatki (MVTU, 80), Moscow, Mashgiz, 1957, pp 77-89

ABSTRACT: To determine the size and nature of the distribution of the force parameters of the rolling process required to develop the technology of the process and to design mills of reliable and economic construction, measurements were made of pressure between metal and rolls (R), the tensile force applied by the hydraulic cylinder, the torque moment on the drive shaft of a pinion-driven stand, the power consumed in rolling, the rpm of the R, the rate of emission of the billet from the R, etc. Calculation is made of the size of the total surface of contact and of the mean unit pressure between metal and R. The latter varies from 31 to 114 kg/mm^2 for billets of various diameters

Card 1/2

SOV/137-58-7-14925

In Investigation of Forces at Work in Cross-rolling Shapes (cont.)

and different grades of steel. The ratio of the average unit pressure to the resistance to deformation under simple tension is found. The efficiency of 3-roll mills is 0.6-0.7.

Ye.T.

1. Rolling mills--Design 2. Rolling mills--Mechanical properties

Card 2/2

ZHAVORONKOV V.A. 137-58-1-619

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 1, p 97 (USSR)

AUTHORS: Tselikov, A. I., Zhavoronkov, V. A.

TITLE: New Methods of Producing Rolled Products (Novyye metody proizvodstva prokata)

PERIODICAL: Mekhaniz. trudoyemkikh i tyazh. rabot, 1957, Nr 6, pp 5-9

ABSTRACT: Modern layouts for rolling (R) sheet of variable cross-section and hat-section rolling of flanged shapes, the starting material for which is ordinary hot-rolled strip and strip of constant cross section. Blanks for drop-forging may be rolled on mills with rolls the working surfaces of which constitute shaped passes ("periodic" R). Methods of producing shapes of variable cross section economically also include various types of cross and helical R (manufacture of wheels, tires, bands, annular parts with internal grooves and external fins, the milling of threads and channels on products for fastening, transverse R of spur and bevel gears, etc.). The designs of some of these types of rolling mills and practical data on industrial production are adduced.

Card 1/1 V.D.

1. Rolling mills—Operation 2. Rolling mills—Production

Zhavoronkov, V.A.

25(1) PHASE I BOOK EXPLOITATION SOV/1888

Moscow. Vyssheye tekhnicheskoye uchilishche

Prokatnyye stany i tekhnologiya prokatki; sbornik statey (Rolling Mills and Processing by Rolling; Collection of Articles) Moscow, Mashgiz, 1958. 206 p. (Series: Its: [Trudy] 84) Errata slip inserted. 5,000 copies printed.

Ed.: A.I. Tselikov, Corresponding Member, USSR Academy of Sciences; Ed. of Publishing House: L.A. Osipova; Tech. Ed.: B.I. Model'; Managing Ed. for Literature on Heavy Machine Building (Mashgiz): S.Ya. Golovin, Engineer.

PURPOSE: This collection of articles is intended for workers of scientific-research institutes and plants, teachers, aspirants, and students specializing in the field of rolling mill engineering.

COVERAGE: This book is composed of theoretical and experimental works and proceedings presented at MVTU imeni Baumana (Moscow Higher Technical School imeni N.Ye. Bauman) by the Department of Machinery and Processes of Rolling and Drawing. It covers the theory of rolling and manufacturing methods described as new. The articles deal with the problem of determining forces in a planetary mill, the study of the process of metal deformation on plain and shaped rolls, continuous cold rolling of pipe, and methods of selecting tools and fixtures for new mills. No personalities are mentioned. References follow each article.

Kovalev, A.A., Candidate of Technical Sciences. Consideration of Elastic Flattening of Rolls Along the Contact Arc in Determining Pressure of the Work on Rolls During Rolling 94

The author describes the method of determining the pressure of the work

---

Rolling Mills and Processing (Cont.) SOV/1888

on rolls, with consideration being given to the elastic flattening of rolls.

Zhavoronkov, V.A., Candidate of Technical Sciences, and Ya.A. Zhukevich-[illegible], Engineer. Basic Parameters of the Tools of Mills for Rolling Periodic Shapes 106

The author discusses the basic types of rolls for three-roll periodic shape rolling mills, giving recommendations for selecting wear-resistant material for tools and a graphic method for designing trasses for new mills.

Grishkov, A.I., Engineer. Investigation of Spreading During Rolling in Plain Rolls 113

Grishkov, A.I., Engineer. Dependence of the Average Unit Pressure and the Width of a Strip During Hot Rolling in Plain Rolls 172

In this article and the preceding one the author deals with problems connected with the theory of spreading and derives related equations. He also presents experimental material on the effect of strip width on spreading and average unit pressure, thus confirming the theory of spreading developed by A.I. Tselikov.

Rolling Mills and Processing (Cont.) SOV/1888

Burdin, V.M., Engineer. Cold Rolling of Thin-walled Steel Tubes on a Long Mandrel 185

The author presents the results of an investigation concerned with the cold rolling of tubes on a long mandrel. 16,33, and 38 mm. carbon steel tubes, and 15 and 16 mm. stainless steel tubes with various ratios of diameter to wall thickness were rolled in the same stand, while 16 mm. tubes were rolled continuously in six stands. Pass design is described; reduction regimes for various tube sizes are determined; and the results of an investigation on the selection of material for rolls and mandrels are presented.

6

ZHAVORONKOV, V.A., kand.tekhn.nauk

Rolling profiles with variable cross section on lateral-helical rolling mills. Nauch.dokl.vys.shkoly; mash.i prib. no.2:130-137 '58. (MIRA 12:10)
(Rolling(Metalwork))

S/903/62/000/000/014/015
E193/E383

AUTHOR: Zhavoronkov, V.A.

TITLE: Fabrication of laminated plastic tubes and profiles

SOURCE: Novyye protsessy obrabotki metallov davleniyem; doklady Soveshch. po novym prots. obrab. met. davleniyem v mashinostr., 1960. Ed. by V. D. Golovlev. Moscow, Izd-vo AN SSSR, 1962. 176 - 180

TEXT: This is a review article concerned with a continuous process for fabrication of plastic tubes and profiles, developed and studied at the Kafedra "Mashiny i tekhnologiya prokatki i volocheniya" MVTU im. Baumana (Department of Drawing and Rolling Equipment and Methods of MVTU im. Bauman). The process is based on the application of machines similar to those used for continuous tube-drawing. A machine of this type is shown schematically in Fig. 1. It consists of two endless chains 2 and 3; the uppermost chain together with its driving and heating gear can be moved in the vertical direction, which makes it possible to vary

Card 1/3

Fabrication of ....

S/902/62/000/000/014/015
E193/E383

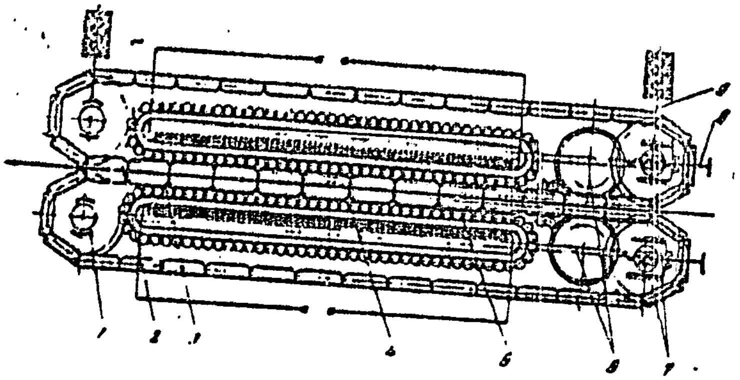
the gap between the chains, which consist of elastically joined segments (forming elements). The chains are moved by guide sprocket wheels 1 and 7. Each segment of the chain is self-lining. Each chain is driven separately and directly by a gear-wheel 6, operating on the thrust principle, which makes it possible to vary the gaps between the chain segments. The working parts of the chains rest on interconnected rollers 5 which can move on plates 4. The upper chain is lifted with the aid of screws 9 and the rear guide sprocket wheel can be similarly moved in the horizontal direction to adjust the chain tension. Three stands of this description, arranged in tandem, are used in continuous production of plastic profiles. The first stand serves to heat the material, the pressing (forming) operation is carried out in the second stand, while the third stand is used to cool the formed profile and to reduce the pressure to relieve the internal stresses set up during the pressing operation. The required shape of the finished article is attained by use of properly shaped chain segments or by application of formers and/or mandrils. Preliminary calculations have shown that the cost of

Card 2/3

Fabrication of ....

S/902/62/000/000/014/015
E193/E383

a machine of this type would be considerably lower than that of a hydraulic press of similar power rating, and that the productivity of the machine (with a total length of three stands not exceeding 4-5 m) sould be 25 - 40 m of various sections per hour. There are 2 figures.



Card 3/3 Fig. 1:

ZHAVORONKOV, V.G.; KONOVAL'TSEVA, N.S.

The 1L72 automatic line for machining flywheel cases. Biul.tekh.-ekon.inform. no.8:11-15 '60. (MIRA 13:9)
(Machine tools) (Automatic control)